



Model Curriculum

Screen & Crusher Operator

SECTOR: IRON & STEEL
**SUB-SECTOR: STEEL, SPONGE IRON, FERRO ALLOYS,
RE-ROLLERS, REFRACTORY**
OCCUPATION: RAW MATERIAL HANDLING
REF ID: ISC/Q0102
NSQF LEVEL: 3



  

Certificate

**CURRICULUM COMPLIANCE TO
QUALIFICATION PACK – NATIONAL OCCUPATIONAL
STANDARDS**

is hereby issued by the
INDIAN IRON AND STEEL SECTOR SKILL COUNCIL
for the
MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: 'Screen & Crusher Operator' QP No. 'ISC/Q0102 NSQF Level 3'

Date of Issuance: **December 22nd, 2015**
Valid up to: **December 21st, 2016**

** Valid up to the next review date of the Qualification Pack*


Authorised Signatory
(Indian Iron and Steel Sector Skill Council)



TABLE OF CONTENTS

1. Curriculum	04
2. Trainer Prerequisites	07
3. Annexure: Assessment Criteria	08

Screen & Crusher Operator

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Screen & Crusher Operator”, in the “Iron & Steel” Sector/Industry and aims at building the following key competencies amongst the learner.

Program Name	Screen & Crusher Operator		
Qualification Pack Name & Reference ID.	Screen & Crusher Operator ISC/Q0102		
Version No.	1.0	Version Update Date	01-04-2017
Pre-requisites to Training	Minimum qualification – 10th Pass		
Training Outcomes	After completing this programme, participants will be able to: <ul style="list-style-type: none"> • Carry out inspection and monitor the screening and crushing unit • Carry out operation of screening and crushing Unit • Carry out basic maintenance activities of screening and crushing unit • Use basic health and safety practices at the work place • Works effectively with others 		

This course encompasses 5 out of 5 National Occupational Standards (NOS) of “Screen & Crusher Operator” Qualification Pack issued by “Indian Iron & Steel Sector Skill Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	Over view of Iron & Steel Industry Theory Duration (hh:mm) 04:00 Practical Duration (hh:mm) 00:00 Corresponding NOS Code	<ul style="list-style-type: none"> • Understanding Iron & steel industry • Understanding types of Iron & Steel Industry • Understanding products of Iron & Steel industry • Activities in Iron & Steel Industry 	PPTs of Iron and steel manufacturing, Charts showing the same
2	Occupational, Health and Safety (OHAS) Theory Duration (hh:mm) 08:00 Practical Duration (hh:mm) 12:00 Corresponding NOS	<ul style="list-style-type: none"> • Understanding the Occupational health & Safety • Understand What is hazard • Documentation for Health and safety • Working at Heights, confined spaces • Remedies for fire at work place 	PPTs for OHAS related to Job Role, Display Material for PPEs related to Job Role, Safety Material



Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Code ISC/N0008		
3	5S & House keeping Theory Duration (hh:mm) 06:00 Practical Duration (hh:mm) 10:00 Corresponding NOS Code ISC/N0008	<ul style="list-style-type: none"> • Identification of bottlenecks in functioning of work place • Various methods of housekeeping both pre-work & post-work as well 	PPTs of 5S, Display Charts of 5S, Audit Checklists of 5S
4	Carry out inspection and monitor the screening and crushing unit Theory Duration (hh:mm) 25:00 Practical Duration (hh:mm) 70:00 Corresponding NOS Code ISC/N0105	<ul style="list-style-type: none"> • Understand the assigned job in accordance with prior planning • Carry out the routine inspection of screening and crushing unit • Understand the importance of proper functioning of the screening and crushing system and continuous monitoring for uninterrupted operation 	PPTs for various types of drawings, Vernier, Micro meter, dial gauge, filler gauge, torque wrench, IC engine, transmission system, lubrication system, fuel charging system, cooling system, accessories, electrical system, hydraulics and pneumatics, motors etc.
5	Carry out operation of screening and crushing unit Theory Duration (hh:mm) 30:00 Practical Duration (hh:mm) 80:00 Corresponding NOS Code ISC/N0106	<ul style="list-style-type: none"> • Understand the operation of screening and crushing system • Plan and coordinate for smooth operation • Carry out the operational activities 	Vernier, Micro meter, dial gauge, filler gauge, torque wrench, IC engine, transmission system, lubrication system, fuel charging system, cooling system, accessories, electrical system, hydraulics and pneumatics, motors etc.
6	Carry out basic maintenance activities of screening and crushing unit	<ul style="list-style-type: none"> • Plan the routine and preventive maintenance that need to be carried out for screening and crushing system 	Vernier, Micro meter, dial gauge, filler gauge,

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p>Theory Duration (hh:mm) 25:00</p> <p>Practical Duration (hh:mm) 90:00</p> <p>Corresponding NOS Code ISC/N0107</p>	<ul style="list-style-type: none"> Coordinate to carry out maintenance activities of screening and crushing system 	torque wrench, IC engine, transmission system, lubrication system, fuel charging system, cooling system, accessories, electrical system, hydraulics and pneumatics, motors etc.
7	<p>Use basic health and safety practices at the workplace</p> <p>Duration (hh:mm) 06:00</p> <p>Practical Duration (hh:mm) 08:00</p> <p>Corresponding NOS Code ISC/N0008</p>	<ul style="list-style-type: none"> Health and safety procedures Fire safety procedures Emergencies, rescue and first aid procedures 	PPE, Different Type of Safety Sign, First Aid Box, Safety instrument and clothing, Step Ladder, Sample Accident reports, Fire Extinguishers, Items required for fire extinguisher and fire Safety
8	<p>Work effectively with others</p> <p>Duration (hh:mm) 08:00</p> <p>Practical Duration (hh:mm) 08:00</p> <p>Corresponding NOS Code ISC/N0009</p>	<ul style="list-style-type: none"> Ensure appropriate communication with superiors, peers and others as applicable at work place Demonstrate appropriate behaviour and etiquette at work place 	Communication skills PPTs, Posters Team management posters
	<p>Total Duration</p> <p>Theory Duration 112:00</p> <p>Practical Duration 278:00</p>	<p>Unique Equipment Required:</p> <ul style="list-style-type: none"> Mechanical Drawings, Blueprints, Basic Tools and Equipment's, measuring tools& precision measurement tools, Lubricant and coolant Material and Equipment for cleaning, lifting machines PPE, Safety Sign, First Aid Box, Fire Extinguishers 	

Grand Total Course Duration: **390Hours, 0 Minutes**

(This syllabus/ curriculum has been approved by Indian Iron and Steel Sector Skills Council)



Trainer Prerequisites for Job role: “Screen & Crusher Operator” mapped to Qualification Pack: “ISC/Q0102”

Sr. No.	Area	Details
1	Description	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “ISC/Q0102”.
2	Personal Attributes	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused, eager to learn and keep oneself updated with the latest in the mentioned field.
3	Minimum Educational Qualifications	Min. ITI pass and preferably CTI/ATI cleared/ Diploma Mechanical
4a	Domain Certification	Certified for Job Role: “Screen & Crusher Operator” mapped to QP: “ISC/Q0102”. Minimum accepted score is 80%
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “SSC/1402”. Minimum accepted score is 80%
5	Experience	Min. 5 years industry experience and minimum 2 years’ experience as Trained or untrained for same Job Role/ Trade



Annexure: Assessment Criteria

Assessment Criteria	
Job Role	Screen & Crusher Operator
Qualification Pack	ISC/Q0102
Sector Skill Council	Indian Iron & Steel Sector Skill Council

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2	The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below)
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on these criteria.
5	To pass the Qualification Pack , every trainee should score a minimum of 60% in every NOS.
6	In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

Assessment outcome (nos)	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
ISC/N0105: Carry out inspection and monitor the screening and crushing unit	PC1. Collect and interpret information from previous day/shift logbook	400	10	5	5
	PC2. Interpret the log book to understand the readiness of the crusher/ball mill, screens, grate bars, grizzly's, sheave etc.		15	5	10
	PC3. Plan to execute the assigned job		20	5	15
	PC4. Seek clarification from supervisor in case of any doubt		15	5	10
	PC5. Ensure availability of the checklist for regular inspection		10	5	5
	PC6. Inspect conveyor galleries for cleanliness		20	5	15



Assessment outcome (nos)	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC7. Inspect physical health of belts conveyor for scratch, cut, hole, pilled-off ply and its training for proper running. For chain conveyor inspect the physical condition of its tray and links		20	5	15
	PC8. Inspect rollers (bolts, troughing and return), roller stands, lagging of H.E. & T.E. drums, physical condition of T.E. drum stand, structure and tension screws		20	5	15
	PC9. Inspect gravity take-up pulley wherever required		20	5	15
	PC10. Inspect crusher teeth, segment, roll. Shaft brush and crusher gap		20	5	15
	PC11. Inspect ball mill wherever necessary		20	5	15
	PC12. Inspect grate bars, grills, grizzly rolls, discs, gear trains and oil pumps etc.		20	5	15
	PC13. Inspect the screens/sheave, vibration motors, "V" belts etc.		15	5	10
	PC14. Inspect all relevant equipment as well as safety interlocking's, pull chords, heat sensors, speed pick-up relays etc. wherever applicable		20	5	15
	PC15. Inspect pollution control/dust catching systems for their control level and efficiency		15	5	10
	PC16. Ensure appropriate display of placards for units under shut-down and maintenance		15	5	10
	PC17. Escalate deviations or abnormalities to supervisor		15	5	10



Assessment outcome (nos)	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC18. Ensure working and the standby unit e.g. grizzly's, grills, grate bars, screen, devices of crushers are in proper condition		15	5	10
	PC19. Ensure in case of absence of parallel stream the running worthiness of the available stream / section is restored by means of carrying out necessary rectification process		15	5	10
	PC20. Ensure monitoring of the working unit e.g. grizzly's, screens, grate bars, grizzly's etc. by visual inspection		20	5	15
	PC21. Ensure continuous monitoring of spillage of raw materials and take appropriate steps as required		20	5	15
	PC22. Ensure the conveyor belt is properly trained (arresting the shifting of the belt)		20	5	15
	PC23. Note anomaly if any and inform supervisor, coordinate for taking corrective Measures		20	5	15
	NOS Total Marks	Total	400	115	285
ISC/N0106 Carry out operation of screening and crushing unit	PC1. Understand the sequence of screening and crushing activities	250	20	5	15
	PC2. Interpret the previous shift/day log book to check readiness of the operating stream		20	5	15
	PC3. Coordinate with the interlinked departments (e.g. blast furnace, raw material handling, traffic etc.) as necessary to start the screening and crushing system		20	5	15



Assessment outcome (nos)	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC4. Seek clarification from supervisor in case of any doubt/deviation		15	5	10
	PC5. Select position of feeder valve as per plan for feeding to blast furnace/wagon loading		20	5	15
	PC6. Carry out visual inspection of the unit for starting the operation		15	0	15
	PC7. Coordinate for loco and wagon placement (in case of wagon loading) and repeat the process as necessary during operation		15	0	15
	PC8. Start crusher from the respective work site control board		15	0	15
	PC9. Interpret the voice communication clearly for starting the operation process		20	5	15
	PC10. Ensure starting the raw material handling system		15	0	15
	PC11. Ensure in case of wagon loading proper signal is being provided		20	5	15
	PC12. Carry out periodical inspection of running units of screening and crushing system		20	5	15
	PC13. Record the deviations/faults as detected through visual inspection and inform the supervisor		15	5	10
	PC14. Coordinate with the concerned team/department for rectification/replacement as necessary to ensure uninterrupted operation		10	5	5



Assessment outcome (nos)	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC15. Maintain log book and record the spill over job, running condition of the unit and abnormalities if any for next shift		10	5	5
	NOS Total Marks	Total	250	55	195
ISC/N0107: Carry out basic maintenance activities of screening and crushing unit	PC1. Analyse the inspection data /report to identify the sections/parts/equipments pertaining to the screening and crushing system that need rectification/replacement	100	15	5	10
	PC2. Plan for rectification/replacement of sections/parts/equipments of both the running and/or standby streams as a part of routine/preventive maintenance		15	5	10
	PC3. Ensure that all maintenance activities are carried out without/minimum interruption of operation to maintain the planned production schedule		15	5	10
	PC4. Seek help/clarification from supervisor in case of any doubt		10	5	5
	PC5. Ensure to spare the stream/parts/sections where maintenance activities are to be carried out		15	5	10
	PC6. Communicate the maintenance team to start the activities		10	5	5
	PC7. Communicate the co-workers on the stream/ parts/sections where the maintenance activities are carried out to prevent any untoward incidents		10	5	5
	PC8. Record the maintenance data/activities in the log book		10	5	5



Assessment outcome (nos)	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	and inform supervisor on completion of the maintenance job				
	NOS Total Marks	Total	100	40	60
ISC/N0008: Use basic health and safety practices at the workplace	PC1. Use protective clothing/equipment for specific tasks and work conditions	150	10	5	5
	PC2. State the name and location of people responsible for health and safety in the workplace		5	0	5
	PC3. State the names and location of documents that refer to health and safety in the workplace		1	0	1
	PC4. Identify job-site hazardous work and state possible causes of risk or accident in the workplace		9	5	4
	PC5. Carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role		10	5	5
	PC6. State location of general health and safety equipment in the workplace		5	0	5
	PC7. Inspect for faults, set up and safely use steps and ladders in general use		5	0	5
	PC8. Work safely in and around trenches, elevated places and confined areas		5	0	5



Assessment outcome (nos)	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC9. Lift heavy objects safely using correct procedures		5	0	5
	PC10. Apply good housekeeping practices at all times		1	0	1
	PC11. Identify common hazard signs displayed in various areas		6	5	1
	PC12. Retrieve and/or point out documents that refer to health and safety in the workplace		4	0	4
	PC13. Use the various appropriate fire extinguishers on different types of fires correctly		9	5	4
	PC14. Demonstrate rescue techniques applied during fire hazard		10	5	5
	PC15. Demonstrate good housekeeping in order to prevent fire hazards		1	0	1
	PC16. Demonstrate the correct use of a fire extinguisher		4	0	4
	PC17. Demonstrate how to free a person from electrocution		5	0	5
	PC18. Administer appropriate first aid to victims as required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.		10	5	5
	PC19. Demonstrate basic techniques of bandaging		5	0	5



Assessment outcome (nos)	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC20. Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		10	5	5
	PC21. Perform and organize loss minimization or rescue activity during an accident in real or simulated environments		5	0	5
	PC22. Administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases		5	0	5
	PC23. Demonstrate the artificial respiration and the CPR Process		5	0	5
	PC24. Participate in emergency procedures		5	0	5
	PC25. Complete a written accident/incident report or dictate a report to another person, and send report to person responsible		9	5	4
	PC26. Demonstrate correct method to move injured people and others during an emergency		1	0	1
	NOS Total Marks	Total	150	45	105
ISC/N0009: Work effectively with others	PC1. Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	100	10	5	5
	PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt		10	5	5



Assessment outcome (nos)	Assessment criteria	Total marks	Out of	Marks allocation	
				Theory	Skills practical
	PC3. Provide information to others clearly, at a pace and in a manner that helps them to understand		10	0	10
	PC4. Display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible		10	5	5
	PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		10	5	5
	PC6. Display appropriate communication etiquette while working		10	0	10
	PC7. Display active listening skills while interacting with others at work		10	0	10
	PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism		10	5	5
	PC9. Demonstrate responsible and disciplined behaviors at the workplace		15	5	10
	PC10. Escalate grievances and problems to		5	0	5
	NOS Total Marks	Total	100	30	70
	Grand Total	1000	1000	285	715
	Percentage Weightage:			50%	50%
	Minimum Pass% to qualify (aggregate):			60%	